Weekly Report

Sept. 2nd, 2018

Done:

1. 研究生素质 ppt
2. 与马老师和 Tarik 的讨论，详情见下面的归纳总结.
3. 忙于清理东西\搬家\办手续等等…花了很多时间精力

To Do:

1. 论文这周找了一些相关工作还没来得及看
2. 今年 vis 有个 workshop: VISREG - Visual Summarization and Report Generation: Beyond Scatter-Plots and Bar-Charts，我要看看作者有一些什么成果可以参考.
3 按照下述归纳总结以及马老师反馈进行下一步
4 之前 TVCG 文章如果还有一些必要的改动，我会跟巫老师了解.

工作时间:

如上述，本周搬家花费太多时间，工作总时间 38hr 左右.

工作安排:

(1) BeXplorer 转 PVis
(2) 当前这个主题尽快确定下来步骤，朝着 pvis 努力
(3) 长期规划希望回国后细细讨论

Paper Reading:

论文找了还没看，主要是 visual composition 一文的相关文献，一定程度上来说并不是特别相关，后面继续找..

总结:

Part 1

Here is a summary of the **data fusion vs. visual fusion**:

1. Driving problem: emergency analysis, generate visual report/visual summary
    a. Several scenarios discussed last week. For complicated scenarios like the one for emergency office, we can **decompose** it into smaller ones. Too many datasets/user requirements is impossible to achieve in a simple visual report/summary.
    b. All these scenarios involve 3 ~ 5 datasets.
    c. The data are from different sources, of different types (time-series, spatial, spatial-temporal, events, and some textual data). There is spatial and/or temporal correspondence between then.

d. **If necessary, add more scenarios**. (depends on step (1) - (3))

2. We will do a user study to compare Data fusion + visualization (**DF**) with simple data preprocessing + visual fusion (**VF**) in generating a visual summary to meet user requirements.
a. We **limit the scope** of our study as *single view* visual report. We adopt simple visualizations as discussed: for multiple time series use stacked line-charts/event sequence visualization or ThemeRiver-like visualizations; for visualizations on the map, we use multiple layers. [Map oriented / time oriented]. Other elements can include annotations.
b. For each case, use these two methods, and see their differences. (we need to define *differences*. Better accuracy? Faster to complete? ...)

3. Based on the results, we derive some guidelines on when and how to use DF and VF in generating visual summary of data from multiple sources with different types.

Part 2

Steps to take:

1. we need to **define** what is data fusion (DF) and what is visual fusion (VF) in data visualization. There should be a clear boundary line between them. The definition can be **two sets of goals** for DF and VF.

2. To achieve this, we need to read more papers about these two concepts:
a. I searched relevant papers of Composite Visualization (*Exploring the Design Space of Composite Visualization*, we discussed last time), and the most results are complicated visual compositions with **multiple linked views** and **interaction**. I will keep finding if there are more closely related papers (survey papers or user study papers, if any).
b. Most application or design study papers involve **both** data fusion and visual fusion. But our current study will not use both of them. Thus, I need to go through the **requirements/goals/tasks/pipeline/workflow/design** parts of those papers, and see **how** and **when** they do data fusion/visual fusion to fulfill all these requirements/goals/tasks.

3. besides, I also have to read carefully about those user study papers. These papers will help me understand
a. what a formal user study on this kind of topic look like?
b. How the study is conducted, between subjects or within subjects?
c. How they measure the advantages/disadvantages of two methods (in our case, visual fusion and data fusion)?

d. How to raise hypothesis and using which hypothesis testing method?
e. ...

4. Then, based on these knowledge (def. of visual fusion and data fusion & how to do user study) use the scenarios to design cases for user study. Each case has both versions of visual or data fusion (**we generate for them** based on the definitions). Users finish tasks(XXX wants to know XXX), we record something and then do tests.

5. After that, implement a system for the user study tasks. The system can be a simple one.

6. Finally, write the paper. However, (1) - (4) are the majority parts, so their writing can be done before (5).